

Experimental installation for studying nonstationary hydrogen permeation through the membranes of metals and alloys

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Keywords: alloy, hydrogen, hydrogen permeability, pressure, diffusion, boundary conditions.

Abstract

The economic production of high-purity hydrogen is required to make possible the transition to environment oriented power systems. In the coming years, rapid increase in the proportion of membrane gas separation is expected. Interest in the processes of hydrogen transfer through metals and alloys has quickened in the past few decades. That is why reliable data concerning hydrogen permeability in materials are required and they allow to approximate the processes of hydrogen transfer by adequate models. The apparatus for studying non-stationary hydrogen permeation through structural and functional material was constructed. Vacuum scheme, principle of operation, key characteristics of the apparatus are presented, and some tentative research results of hydrogen permeability through the Ta₇₇Nb₂₃ (wt.%) alloy are submitted.